LPDES PERMIT NO. LA0005754 (Agency Interest No. 1136)

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

I. Company/Facility Name: Shell Chemical LP
Geismar Plant
7594 Highway 75
Geismar, Louisiana 70734

II. Issuing Office: Louisiana Department of Environmental Quality (LDEQ)
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Date Prepared: March 18, 2008

IV. Permit Action/Status:

A. Reason For Permit Action:

Proposed reissuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401, 405-415, and 417-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC 33:IX. Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. LPDES permit: Permit effective date: May 1, 2002
Permit expiration date: April 30, 2007
Permit modification effective date: May 30, 2002
EPA has not retained enforcement authority.

C. LPDES application received on October 30, 2006. Application addenda received on July 6, 2007, February 8, 2008 and March 4, 2008.

V. Facility Information:

A. Location - 7594 Highway 75, Geismar, Ascension Parish (Latitude 30°11'00" and Longitude 90°59'47")

B. Applicant Activity -

According to the application, Shell Chemical LP, Geismar Plant, is an organic chemical manufacturer that primarily manufactures olefins and alcohol products from ethylene. These products include alcohol ethoxylates, ethylene oxides, ethylene glycols, glycol ethers, and propanediol.

C. Technology Basis - 40 CFR Chapter 1, Subchapter N/Parts 401, 405-415, and 417-471 have been adopted by reference at LAC 33:IX.4903

Guideline	Reference
Organic Chemicals, Plastics, and Synthetic Fibers Process flow – 6.1 MGD	40 CFR 414 (Subparts F, G, H and I)

Other sources of technology based limits:

- LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).
- Best Professional Judgement
- LPDES Class I Sanitary Discharge General Permit (LAG530000)

D. Fee Rate -

1. Fee Rating Facility Type: Major
2. Complexity Type: VI
3. Wastewater Type: II
4. SIC code: 2869

E. Continuous Facility Effluent Flow – 130.72 MGD

VI. Receiving Waters: Mississippi River (Outfalls 001, 101, 201, 301, 401, 501 and 601)
Smith Bayou (Outfalls 002, 003, 004, 005, 006, 106, 007)

Mississippi River –

A. TSS (15%), mg/L: 32.0 mg/l*
B. Average Hardness, mg/L $CaCO_3$: 153.4 mg/l*
C. Critical Flow, cfs: 141,955 *
D. Mixing Zone Fraction: 1/3 *
E. Harmonic Mean Flow, cfs: 366,748*
F. River Basin: Mississippi River, Segment No.: 070301
G. Designated Uses: primary contact recreation, secondary contact recreation, fish and wildlife propagation, drinking water supply

* Stream data based upon the following: Water Quality Management Plan, Volume 5A, 1994; LAC 33:IX Chapter 11, and from recommendations from the Engineering Section. Hardness and 15% TSS data come from the monitoring station 58010319, located on the Mississippi River.

Smith Bayou –

A. River Basin: Lake Pontchartrain, Segment 040404
B. Designated Uses: primary contact recreation, secondary contact recreation, fish and wildlife propagation

VII. Outfall Information:

Outfall 001

A. Type of wastewater - The combined waste streams from Internal Outfalls 101, 201, 301, 401, 501, and 601.

B. Location – at the discharge line to the Mississippi River after commingling of all contributing streams and prior to combining with the waters of the Mississippi River (Latitude 30°10'37", Longitude 91°00'08").

C. Treatment - none

D. Flow - Continuous Flow 130.72 MGD, according to the application

E. Receiving waters - Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data – See Appendix C

Internal Outfall 101

A. Type of wastewater - The continuous discharge of treated process wastewater, process area stormwater, tank farm area stormwater, sanitary wastewater, miscellaneous utility wastewaters, intermittently discharged cooling tower blowdown from the K-2 unit, and intermittently discharged hydrostatic test water, fire system test water, laboratory wastewater and groundwater remediation wastewater.

B. Location – At the point of discharge from the treatment facility prior to combining with the waste stream of Final Outfall 001

C. Treatment - treatment of utility wastewaters consists of:

1. neutralization basin
2. phase separation basins
3. equalization tank
4. spills/surge tank
5. dissolved air flotation clarifiers
6. activated sludge aeration tanks
7. final clarifiers (two)
8. sludge handling facilities
    a. sludge thickener tank
    b. sludge surge tank
    c. sludge dewatering belt filters
    d. sludge dryer

D. Flow - Continuous, 6.11 MGD (30-day Max)

Process Wastewater - 3.96 MGD (Flow based upon actual 30-day Max data for the period May 2004 – June 2006.)
Proposed additional process wastewater – 1.0 MGD (proposed additional flow from the PDO Unit, K-5/OIU Unit, and sludge dryer)
Sanitary Wastewater - 0.15 MGD
Utility Wastewater - 0.44 MGD
Process area drainage - 0.56 MGD
Total - 6.11 MGD

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

G. Effluent Data – See Appendix C.

Internal Outfall 201

A. Type of wastewater - Utility wastewater consisting of clarifier underflow, clarifier overflow, boiler blowdown, deaerator overflow, and waste heat generator blowdown.

B. Location – Sum of individual measurements taken at the following points of discharge: intake raw river water treatment clarification system underflow at the clarifiers prior to discharge into the river water return canal; boiler and waste heat generator blowdown and deaerator overflow at the V-U204 blowdown vessel, prior to combining with any other streams.

C. Treatment - None

D. Flow - Continuous, 0.51 MGD (30-day Max)

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Internal Outfall 301

A. Type of wastewater - Utility wastewater consisting of once-through non-contact cooling water, softener regeneration backwash, deaerator overflow, and filter backwash.

B. Location - Discharge to final outfall 001 thence the Mississippi River

C. Treatment - treatment of utility wastewaters consists of:
- flocculation
- sand filter

D. Flow - Continuous, 52.77 MGD (30-Day Max)

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Internal Outfall 401

A. Type of wastewater - Utility wastewater consisting of once-through non-contact cooling water, boiler blowdown, deaerator overflow and cooling tower blowdown from EO-2

B. Location - At the point of discharge of the plant-east once-through non-contact cooling water across Zone B crossbox prior to combining with other waters

C. Treatment - none

D. Flow - Continuous, 70.13 MGD (30-Day Max)

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Internal Outfall 501

A. Type of wastewater - Utility wastewater consisting of cooling tower blowdown from AO-3 and EO-3.

B. Location – At the point of discharge from the AO-3 cooling tower and the EO-3 cooling towers. Samples shall be collected by flow-weighted composite.

C. Treatment - none

D. Flow - Continuous, 0.42 MGD (30-Day Max)

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Internal Outfall 601

A. Type of wastewater - Utility wastewater consisting of cogeneration blowdown.

B. Location – At the point of discharge from the cogeneration unit

C. Treatment - none

D. Flow - Continuous, 0.79 MGD (30-Day Max)

E. Receiving waters - Final Outfall 001, thence the Mississippi River

F. Basin and segment - Mississippi River Basin, Segment 070301

Outfall 002

A. Type of wastewater - Non-process area stormwater from the South Ditch

B. Location – At the point of discharge just beyond the plant's southeast skimming basin and west of the Illinois Central Railroad tracks prior to combining with the discharge of Air Product's stormwater discharge point (Latitude 30°11'10", Longitude 90°59'30")

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

Outfall 003

A. Type of wastewater - Non-process area stormwater from the North Ditch

B. Location – At the point of discharge from the North Ditch at the northeast corner of the polymers complex (Latitude 30°12'5", Longitude 90°58'14")

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

Outfall 004

A. Type of wastewater - Non-process area stormwater from the East Ditch and a de minimus amount of fire system test water which may contain cooling tower blowdown which was routed to the firewater pond

B. Location – At the point of discharge from the concrete structure at the southeast corner of the AO-ID-2 unit (Latitude 30°11'17", Longitude 90°59'06")

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment -Lake Pontchartrain Basin, Segment 040404

Outfall 005

A. Type of wastewater - Non-process area stormwater from the Southeast Ditch and a de minimus amount of fire system test water which may contain cooling tower blowdown which was routed to the firewater pond

B. Location – At the point or discharge from the outfall structure south of the PDO-1 process unit (Latitude 30°11'22", Longitude 90°58'55")

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

Outfall 006

A. Type of wastewater – Non-process area stormwater including fire system flush waters, PDO fire water overflow, non-contaminated stormwater from tank farm drainage collection system, and previously monitored effluent from Outfall 106*

* Discharge from this outfall (with the exception of PDO fire water overflow) may occur from various locations on the site.

B. Location – At the point of discharge prior to commingling with other waters

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

Internal Outfall 106

A. Type of wastewater - Utility wastewater consisting of cooling tower blowdown from the PDO/Comfac cooling tower.

B. Location – At the point of discharge from the PDO cooling tower prior to being routed to the PDO firewater pond.

C. Treatment - none

D. Flow - Continuous, 0.17 MGD (30-Day Max)

E. Receiving waters - Final Outfall 006, thence to Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

Outfall 007

A. Type of wastewater – Hydrostatic test water from tanks, pipe and equipment*
* The discharge of hydrostatic test water may occur from various locations on the site and may flow to any stormwater outfall at the facility.

B. Location – At the point of discharge from the pipe or vessel being tested prior to commingling with other waters

C. Treatment - None

D. Flow - Intermittent

E. Receiving waters - Smith Bayou

F. Basin and segment - Lake Pontchartrain Basin, Segment 040404

VIII. Proposed Permit Limits and Rationale:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. CHANGES FROM PREVIOUS PERMIT

1. Outfall 001 – Ammonia and Phosphorus monitoring from the previous permit has been removed. These pollutants were added to the previous because at the time, they were stream impairments listed on the 305(b) report. Since that time these pollutants have been delisted.

2. Outfall 101 - The sample type for Phenol has been changed to Grab.

3. Outfall 001 – The dilution series for toxicity monitoring has changed based upon current flow information. As a result of the increased critical dilution, the monitoring frequency for biomonitoring has increased to once/quarter.

4. Outfall 106 – This outfall has been added to the permit.

5. Outfall 007 This outfall has been added to the permit.

6. Outfall 101 – In accordance with LAC 33:IX.2501.G, the sample type for Phenol has been changed to grab.

7. Outfall 101 – All mass limitations have decreased based upon decreased flows reported in the permit renewal application (see Appendix A for detail on calculation of limitations).

8. Outfall 101 – The monitoring frequency for Total Zinc has been increased to 1/month due to the number of excursions reported during the last few years.

B. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on state water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for the limitations established in the permit.

Shell Chemical, LP is subject to Best Practicable Control Technology Currently Available (BPT) and Best Available Technology Economically Achievable (BAT) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
- Organic chemical manufacturing	40 CFR 414, Subparts F, G, H and I

Proposed effluent limitations and basis of permit limitations are found below:

Outfall 001 - The combined waste streams from Internal Outfalls 101, 201, 301, 401, 501, and 601

Paramater	Monthly Avg.	Daily Max.	Frequency	Sample Type
Flow-MGD	Report	Report	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Number of Events >60 Minutes	---	0 (*1)	Continuous	Recorder
pH Range Excursions (Continuous Monitoring), Monthly Total Accumulated Time in Minutes	---	446 (*1)	Continuous	Recorder
pH Minimum/Maximum Values (Standard Units)	Report (Min)	Report (Max)	Continuous	Recorder
WHOLE EFFLUENT TOXICITY TESTING				
48-hr. Acute	---	---	1/quarter	24 hr. Composite

(*1) The pH shall be within the range of 6.0 – 9.0 standard units at all times subject to continuous monitoring pH range excursion provisions. Where a permittee continuously measures the pH of wastewater as a requirement or option in an LPDES permit, the permittee shall maintain the pH of such wastewater within the range set forth in the permit, except that excursions from the range are permitted, provided:

1. The total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month; and
2. No individual excursion from the range of pH values shall exceed 60 minutes.

EFFLUENT LIMITATIONS BASIS: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. pH requirements are based upon the previous permit and 40 CFR 414, Subparts F, G and H. See Section E below for justification of Whole Effluent Toxicity Testing requirements.

Outfall 101 – The continuous discharge of treated process wastewater, process area stormwater, tank farm area stormwater, sanitary wastewater, miscellaneous utility wastewaters, intermittently discharged cooling tower blowdown from the K-2 unit, and intermittently discharged hydrostatic test water and firewater system test water

Paramater	Monthly Avg. (lbs/day)	Daily Max. (lbs/day)	Frequency	Sample Type
Flow-MGD	Report	Report	1/day	Estimate
BOD_5	1581	4183	2/week	24-hr. Composite
TSS	2299	7332	2/week	24-hr. Composite
METALS AND CYANIDE				
Total Zinc	3.85	9.58	1/month	24-hr. Composite
VOLATILE COMPOUNDS				
Acrylonitrile	4.42	11.14	1/year	24-hr. Composite
Benzene	1.70	6.26	1/year	24-hr. Composite
Carbon Tetrachloride	0.83	1.75	1/year	24-hr. Composite
Chlorobenzene	0.69	1.29	1/year	24-hr. Composite
Chloroethane	4.79	12.34	1/year	24-hr. Composite
Chloroform	1.04	2.29	1/year	24-hr. Composite
1,1-Dichloroethane	1.01	2.72	1/year	24-hr. Composite
1,2-Dichloroethane	3.13	9.71	1/year	24-hr. Composite
1,1-Dichloroethylene	0.74	1.15	1/year	24-hr. Composite
1,2-trans-Dichloroethylene	0.97	2.49	1/year	24-hr. Composite
1,2-Dichloropropane	7.04	10.59	1/year	24-hr. Composite
1,3-Dichloropropylene	1.34	2.03	1/year	24-hr. Composite
Ethylbenzene	1.47	4.97	1/year	24-hr. Composite
Methyl Chloride	3.96	8.75	1/year	24-hr. Composite
Methylene Chloride	1.84	4.10	1/year	24-hr. Composite
Tetrachloroethylene	1.01	2.58	1/year	24-hr. Composite
Toluene	1.20	3.68	1/year	24-hr. Composite
1,1,1-Trichloroethane	0.97	2.49	1/year	24-hr. Composite
1,1,2-Trichloroethane	0.97	2.49	1/year	24-hr. Composite
Trichloroethylene	0.97	2.49	1/year	24-hr. Composite
Vinyl Chloride	4.79	12.34	1/year	24-hr. Composite
ACID COMPOUNDS				
2-Chlorophenol	1.43	4.51	1/year	24-hr. Composite
2,4-Dichlorophenol	1.80	5.16	1/year	24-hr. Composite
2,4-Dimethylphenol	0.83	1.66	1/year	24-hr. Composite
4,6-Dinitro-o-Cresol	3.59	12.75	1/year	24-hr. Composite
2,4-Dinitrophenol	3.27	5.66	1/year	24-hr. Composite
2-Nitrophenol	1.89	3.18	1/year	24-hr. Composite
4-Nitrophenol	3.31	5.71	1/year	24-hr. Composite
Phenol	0.69	1.20	1/year	Grab
BASE NEUTRAL COMPOUNDS				
Acenaphthene	1.01	2.72	1/year	24-hr. Composite
Acenaphthylene	1.01	2.72	1/year	24-hr. Composite
Anthracene	1.01	2.72	1/year	24-hr. Composite
Benzo(a)anthracene	1.01	2.72	1/year	24-hr. Composite
Benzo(a)pyrene	1.06	2.81	1/year	24-hr. Composite

3,4-Benzofluoranthene	1.06	2.81	1/year	24-hr. Composite
Benzo(k)fluoranthene	1.01	2.72	1/year	24-hr. Composite
Bis(2-ethylhexyl) Phthalate	4.74	12.84	1/year	24-hr. Composite
Chrysene	1.01	2.72	1/year	24-hr. Composite
1,2-Dichlorobenzene	3.54	7.50	1/year	24-hr. Composite
1,3-Dichlorobenzene	1.43	2.03	1/year	24-hr. Composite
1,4-Dichlorobenzene	0.69	1.29	1/year	24-hr. Composite
Diethyl phthalate	3.73	9.35	1/year	24-hr. Composite
Dimethyl phthalate	0.87	2.16	1/year	24-hr. Composite
Di-n-butyl phthalate	1.24	2.62	1/year	24-hr. Composite
2,4-Dinitrotoluene	5.20	13.12	1/year	24-hr. Composite
2,6-Dinitrotoluene	11.74	29.51	1/year	24-hr. Composite
Fluoranthene	1.15	3.13	1/year	24-hr. Composite
Fluorene	1.01	2.72	1/year	24-hr. Composite
Hexachlorobenzene	0.49	1.18	1/year	24-hr. Composite
Hexachlorobutadiene	0.92	2.26	1/year	24-hr. Composite
Hexachloroethane	0.97	2.49	1/year	24-hr. Composite
Naphthalene	1.01	2.72	1/year	24-hr. Composite
Nitrobenzene	1.24	3.13	1/year	24-hr. Composite
Phenanthrene	1.01	2.72	1/year	24-hr. Composite
Pyrene	1.15	3.08	1/year	24-hr. Composite
1,2,4-Trichlorobenzene	3.13	6.45	1/year	24-hr. Composite

EFFLUENT LIMITATIONS BASIS for Outfall 101: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. Hexachlorobenzene limitations are based upon water quality. See Appendix B for detail on the calculation of water quality limitations. All other requirements are based upon 40 CFR 414, Subparts F, G, H and I. See Appendix A for detail on calculation of the technology effluent limitations.

Outfall 201 - Utility wastewater consisting of clarifier underflow, clarifier overflow, boiler blowdown, deaerator overflow, and waste heat generator blowdown.

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/week	Estimate
Clarifying Agents	Report	---	1/month	Inventory Calculation

EFFLUENT LIMITATIONS BASIS for Outfall 201: The quantity and types of all coagulants (clarifying agents) used in the intake raw river water treatment clarification system during the sampling month shall be recorded. Records of the quantity and type of coagulants used shall be retained for three (3) years following Part III.C.3. No DMR reporting shall be required.

Outfall 301 - Utility wastewater consisting of once-through non-contact cooling water, softener regeneration backwash, deaerator overflow, and filter backwash.

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	3/week	Estimate
TOC	---	5 (*1)	3/week	24-Hour Composite

(*1) The daily TOC concentration of the effluent less the daily TOC concentration of the raw river water intake shall not exceed 5 mg/l. Concurrent monitoring by 24-hour composite sampling of both intake and effluent is required. A net TOC concentration contribution calculated as a negative value due to analytical variability shall be reported as zero.

EFFLUENT LIMITATIONS BASIS for Outfall 301: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitation for TOC is based upon BPJ (the previous permit and Office policy for similar discharges).

Outfall 401 – Utility wastewater consisting of once-through non-contact cooling water, boiler blowdown, deaerator overflow and cooling tower blowdown from EO-2

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	3/week	Estimate
TOC	---	5 (*1)	3/week	24-Hour Composite

(*1) The daily TOC concentration of the effluent less the daily TOC concentration of the raw river water intake shall not exceed 5 mg/l. Concurrent monitoring by 24-hour composite sampling of both intake and effluent is required. A net TOC concentration contribution calculated as a negative value due to analytical variability shall be reported as zero.

EFFLUENT LIMITATIONS BASIS for Outfall 401: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitation for TOC is based upon BPJ (the previous permit and Office policy for similar discharges).

Outfall 501 - Utility wastewater consisting of cooling tower blowdown from AO-3 and EO-3.

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/week	Estimate
TOC	---	5 (*1)	1/week	Grab

(*1) The daily TOC concentration of the effluent less the daily TOC concentration of the raw river water intake shall not exceed 5 mg/l. Concurrent monitoring by grab sampling of both intake and effluent is required. A net TOC concentration contribution calculated as a negative value due to analytical variability shall be reported as zero.

EFFLUENT LIMITATIONS BASIS for Outfall 501: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitation for TOC is based upon BPJ (the previous permit and Office policy for similar discharges).

Outfall 601 - Utility wastewater consisting of cogeneration blowdown

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/week	Estimate
TOC	---	5 (*1)	1/week	Grab

(*1) The daily TOC concentration of the effluent less the daily TOC concentration of the raw river water intake shall not exceed 5 mg/l. Concurrent monitoring by grab sampling of both intake and effluent is required. A net TOC concentration contribution calculated as a negative value due to analytical variability shall be reported as zero.

EFFLUENT LIMITATIONS BASIS for Outfall 601: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitation for TOC is based upon BPJ (the previous permit and Office policy for similar discharges).

Outfall 002 – Non-process area stormwater from the South Ditch
Outfall 003 – Non-process area stormwater from the North Ditch
Outfall 004 – Non-process area stormwater from the East Ditch and a de minimus amount of fire system test water which may contain cooling tower blowdown which was routed to the firewater pond
Outfall 005 – Non-process area stormwater from the Southeast Ditch and a de minimus amount of fire system test water which may contain cooling tower blowdown which was routed to the firewater pond

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/quarter	Estimate
TOC	---	50	1/quarter	Grab
Oil & Grease	---	15	1/quarter	Grab
pH Min/Max Values (Standard Units)	6.0 (Min)	9.0 (Max)	1/quarter	Grab

EFFLUENT LIMITATIONS BASIS for Outfalls 002, 003, 004, 005 : The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. TOC and Oil & Grease limitations are based upon the previous permit and LDEQ's stormwater guidance [letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6)]. pH limitations are based upon the previous permit.

Outfall 006 - Non-process area stormwater including fire system flush waters, PDO fire water overflow, non-contaminated stormwater from tank farm drainage collection system

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/discharge	Estimate
TOC	---	50	1/discharge	Grab
Oil & Grease	---	15	1/discharge	Grab
pH Min/Max Values (Standard Units)	6.0 (Min)	9.0 (Max)	1/discharge	Grab

EFFLUENT LIMITATIONS BASIS for Outfall 006 : The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. TOC and Oil & Grease limitations are based upon the previous permit and LDEQ's stormwater guidance [letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6)]. pH limitations are based upon the previous permit.

Outfall 106 - Utility wastewater consisting of cooling tower blowdown from the PDO/Comfac cooling tower.

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/week	Estimate
TOC	---	5 (*1)	1/week	Grab

(*1) The daily TOC concentration of the effluent less the daily TOC concentration of the raw river water intake shall not exceed 5 mg/l. Concurrent monitoring by 24-hour composite sampling of both intake and effluent is required. A net TOC concentration contribution calculated as a negative value due to analytical variability shall be reported as zero.

EFFLUENT LIMITATIONS BASIS for Outfall 106: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitation for TOC is based upon BPJ (Office policy for similar discharges).

Outfall 007 – Hydrostatic test water from tanks, pipe and equipment

Paramater	Monthly Avg. (mg/l)	Daily Max. (mg/l)	Frequency	Sample Type
Flow-MGD	Report	Report	1/discharge	Estimate
TSS*	---	90	1/discharge	Grab
Benzene**	---	50 µg/l	1/discharge	Grab
Total BTEX**	---	250 µg/l***	1/discharge	Grab
Total Lead**	---	50 µg/l	1/discharge	Grab
pH Min/Max Values (Standard Units)	6.0 (Min)	9.0 (Max)	1/discharge	Grab

* The background concentration of Total Suspended Solids (TSS) will be allowed in the discharge if the effluent is being returned to the same water source from which the intake water was obtained. In these cases, the permit limitations will be 90 mg/L plus the concentration of TSS in the intake water. The TSS concentration of the intake water shall be reported on the Discharge Monitoring Report (DMR) along with the concentration of TSS in the effluent.

** Benzene, Total BTEX, and Total Lead shall be measured on discharges from pipe or vessels which have been used for the storage or transportation of liquid or gaseous petroleum hydrocarbons. Accordingly, Flow, TSS and pH are the only testing requirements for new pipe or vessels.

*** BTEX shall be measured as the sum of benzene, toluene, ethylbenzene, and total xylene (including ortho-, meta-, and para-xylene) as quantified by the last approved EPA method at 40 CFR 136.

EFFLUENT LIMITATIONS BASIS for Outfall 007: The requirement to report flow is based upon LAC 33:IX.2707.I.1.b. The limitations for TSS, Benzene, Total BTEX, Total Lead and pH are based upon the Hydrostatic General Permit (LAG670000)

C. MONITORING FREQUENCIES

All monitoring frequencies are based upon either the previous permit or office policy for similar discharges, with the exception of Total Zinc. The Total Zinc monitoring frequency has been increased to 1/month based upon the facility's compliance history. Whole Effluent Toxicity testing frequency is based upon recommendations from the Municipal and General Water Permits Section (see Appendix D).

D. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limitations by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008.

In accordance with 40 CFR 122.44(d)(1)/LAC 33:IX.2707.D.1., the existing discharge was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix B.

The following pollutants received water quality based effluent limits:

Hexachlorobenzene

The technology based limitations (OCPSF) established at Internal Outfall 101, as well as effluent data for Outfall 001 were screened against water quality standards to determine if there was reasonable potential for exceedance of the standards. Hexachlorobenzene demonstrated

reasonable potential to violate water quality standards. This Office has determined that since the flow from Final Outfall is comprised of over 100 MGD of once through non-contact cooling water, dilution of process waters will be too great to reveal any presence of Hexachlorobenzene. Therefore, hexachlorobenzene water quality limitations have been established at Internal Outfall 101 rather than Final Outfall 001.

Minimum quantification levels (MQLs) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. They are also listed in Part II of the permit.

To further ensure compliance with 40 CFR 122.44(d)(1), whole effluent toxicity testing has been established for Outfall 001 (See Section E below).

E. BIOMONITORING REQUIREMENTS

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall 001 are as follows:

TOXICITY TESTS	FREQUENCY
NOEC, Pass/Fail [0/1], Lethality, Static Renewal, 48-Hour Acute, Pimephales promelas	1/quarter
NOEC, Value [%], Lethality, Static Renewal, 48-Hour Acute, Pimephales promelas	1/quarter

NOEC, Value [%] Coefficient of Variation, Static Renewal 48-Hour Acute, Pimephales promelas	1/quarter
NOEC, Pass/Fail [0/1], Lethality, Static Renewal 48-Hour Acute, Daphnia pulex	1/quarter
NOEC, Value [%], Lethality, Static Renewal 48-Hour Acute Daphnia pulex	1/quarter
NOEC, Value [%] Coefficient of Variation, Static Renewal 48-Hour Acute, Daphnia pulex	1/quarter

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to this Office. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. The additional effluent concentrations shall be 1.8%, 2.4%, 3.2%, 4.2%, and 5.6% effluent. The biomonitoring critical dilution is defined as 4.2% effluent.

IX. Compliance History/DMR Review:

A. Compliance History – The facility has no open enforcement actions.

B. DMR Review - Below is a summary of the excursions reported for the period (Jan. 2005 – January 2008)

Parameter	Outfall	Date	Limitation	Sample Result
Total Zinc	101	3/31/2005	5.34/13.28 lbs/day	11.92:11.92 lbs/day
Total Zinc	101	9/30/2006	5.34/13.28 lbs/day	4.62/14.72 lbs/day
Oil & Grease	002	12/31/2006	15 mg/l	25 mg/l
Total Zinc	101	12/31/2006	5.34/13.28 lbs/day	4.34/29.87 lbs/day
TSS	101	11/30/2007	2651/8456 lbs/day	1739/12118 lbs/day
Total Zinc	101	12/31/2007	5.34/13.28 lbs/day	4.61/17.26 lbs/day

IX. Endangered Species:

The receiving waterbodies for Shell Chemical Geismar Plant are Subsegment 070301 of the Mississippi River Basin and Segment 040404 of the Lake Pontchartrain Basin. Segment 040404 is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). However, Segment 070301 of the Mississippi River Basin has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which is listed as a threatened or endangered species. This draft permit has been submitted to the FWS for review in accordance with a letter dated October 24, 2007 from Boggs (FWS) to Brown (LDEQ). As set forth in the Memorandum of Understanding between the LDEQ and the FWS, and after consultation with FWS, LDEQ has determined that the issuance of the LPDES permit is

not likely to have an adverse effect upon the Pallid Sturgeon. Effluent limitations are established in the permit to ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. The more stringent of technology and water quality based limits (as applicable) have been applied to ensure maximum protection of the receiving water.

X. Historic Sites:

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

XI. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to issue a permit for the discharge described in the application.

XII. Variances:

No requests for variances have been received by this Office.

XIII. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

A public notice will be published in a local newspaper of general circulation and in the Office of Environmental Services Public Notice Mailing List.

XIV. Stormwater Pollution Prevention Plan (SWP3) Requirements:

In accordance with LAC 33:IX.2707.I.3 and 4[40 CFR 122.44(I)(3) and (4)], a Part II condition is proposed for applicability to all stormwater discharges from the facility, either through

permitted outfalls, through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires implementation of a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, that plan could be incorporated by reference into the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of storm water associated with industrial activity, as defined at LAC 33:IX.2511.B.14 [40 CFR 122.26(b)(14)].

XV. TMDL Waterbodies:

Shell Chemical LP Geismar Plant discharges process wastewaters, utility wastewaters, miscellaneous wastewaters and stormwater to the Mississippi River (Segment 070301). Segment 070301 is not listed on LDEQ's Final 2006 303(d) List, as impaired, and to date no TMDLs have been established. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by any future TMDLs.

The facility also discharges stormwater runoff, and miscellaneous utility wastewaters to Segment 040404 of the Lake Pontchartrain Basin. This segment is currently impaired for organic enrichment/low DO and pathogen indicators. TMDLs are scheduled for completion by March 31, 2011, with an EPA backstop date of March 31, 2012. This Office has determined that due to the nature of the discharges from Shell Chemical's Outfalls 002, 003, 004, 005, 006 or 007, there is no potential to discharge pollutants that could contribute to organic enrichment or pathogen indicators at a level that could cause or contribute to further impairment of the receiving stream.

A reopener clause will be included in the permit to allow for the establishment of more stringent effluent limitations and requirements as imposed by any future TMDLs.